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09/700,448	02/20/2001	Allen Le Roy Limberg	SAMS:091	3754

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EXAMINER

NATNAEL, PAULOS M

ART UNIT	PAPER NUMBER
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2614

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/700,448

Applicant(s)

LIMBERG ET AL.

Examiner

Paulos M. Natnael

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-47 and 50-54 is/are allowed.
- 6) ☒ Claim(s) 48 is/are rejected.
- 7) ☒ Claim(s) 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim **48** is rejected under 35 U.S.C. 102(b) as being anticipated by **Lee et al.**, U.S. pat. No. **5,619,269**.

Considering claim **48**, the claimed a baseband signal received and processed by a television signal receiver, said baseband signal having a uniform symbol rate, and being composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality $(M-N)$ in number of said data segments including consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a respective ghost-cancellation reference signal that is composed of a plurality of PN sequences that are orthogonal to, each other, **is met by** Lee's frame sync signal for digital transmission system in which

the receiver (shown in Fig.7) receives a digital signal composed of data segments consisting 832 symbols (Figs. 3 and 4), each data segment divided into continuous data fields and PN sequences as shown in Figs. 5 and 6, the PN sequences having inverted polarity (or orthogonal) in alternate fields.

Allowable Subject Matter

3. Claims **1-47, 50-54** are allowable over the prior art.
4. Claim **49** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose a data signal receiver for an electromagnetic wave signal including a pilot carrier and vestigial sideband modulation of a suppressed carrier of the same frequency and phase as said pilot carrier, said vestigial sideband modulation being in accordance with a baseband signal having a uniform symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said data signal receiver comprising:

circuitry for selecting said electromagnetic wave signal, converting the frequencies of said electromagnetic wave signal after its selection, and amplifying said electromagnetic wave signal after its selection and conversion in frequency;

circuitry for synchrodyning said electromagnetic wave signal to baseband after its

selection, conversion in frequency and amplification and supplying digitized samples of a baseband signal resulting from synchrodyning said electromagnetic wave signal to baseband;

an adaptive equalizer for receiving said samples of a baseband signal resulting from synchrodyning said electromagnetic wave signal to baseband, and supplying an equalizer response to those received samples as weighted by kernel weights that are electrically adjustable;

circuitry for regenerating transmitted data from said equalizer response;

a comb filter for differentially delaying said equalizer response, so said first ghost cancellation reference signal in the more delayed equalizer response occurs simultaneously with said second ghost-cancellation reference signal in the less delayed equalizer response, and subtractively combining said more delayed equalizer response and said less delayed equalizer response to generate a comb filter response;

a computer responsive to selected portions of said comb filter response including the result of subtractively combining said first and second ghost-cancellation reference signals, for performing initial electrical adjustments of the kernel weights of said adaptive equalizer whenever said data signal receiver is initially operated after a time of inoperation or whenever said electromagnetic wave signal is initially selected, as in claim 1.

An electromagnetic wave signal received and processed by a television signal receiver, the signal comprising vestigial sideband modulation of a suppressed carrier in

accordance with a baseband signal having a uniform baud rate or symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality $(M-N)$ in number of said data segments including consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a first ghost-cancellation reference signal and a second ghost-cancellation reference signal beginning substantially 1368 symbol epochs later than said first ghost-cancellation reference signal, which said first and second ghost-cancellation reference signal exhibit respective variations that are complementary to each other, as in claim 7.

An electromagnetic wave signal received and processed by a television signal receiver, the signal comprising vestigial sideband modulation of a suppressed carrier in accordance with a baseband signal having a uniform baud rate or symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by

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beginning with a plurality N in number of said data segments used as a data frame header and concluding with a plurality $(M-N)$ in number of said data segments that include consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a respective ghost-cancellation reference signal that is composed of a plurality of PN sequences that are orthogonal to each other, as in claim 24.

An electromagnetic wave signal received and processed by a television signal receiver, the signal comprising vestigial sideband modulation of a suppressed carrier in accordance with a baseband signal having a uniform symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality $(M-N)$ in number of said data segments including consecutive multi-level symbols used for transmitting data, said data segments each beginning with a respective data segment synchronization code of a similar prescribed character, said data frame header in each said data frame including a respective ghost-cancellation reference signal that begins in one data segment of said data frame header and finishes in the next-occurring data segment of said data frame header, said respective data segment synchronization code for said next data segment

of said data frame header being subsumed in said respective ghost-cancellation reference signal that finishes therein, as in claim **26**.

A baseband digital signal received and processed by a television signal receiver, the signal having a uniform symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a plurality N in number of said data segments used as a data frame header and concluding with a plurality $(M-N)$ in number of said data segments composed of consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a first ghost cancellation reference signal and a second ghost-cancellation reference signal beginning substantially 1368 symbol epochs later than said first ghost-cancellation reference signal, which said first and second ghost-cancellation reference signal exhibit respective variations that are complementary to each other, as in claim **31**

A baseband digital signal received and processed by a television signal receiver, the signal having a uniform symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said

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data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality (M-N) in number of said data segments including consecutive multi-level symbols used for transmitting data, said data segments each beginning with a respective data segment synchronization code of a similar prescribed character, said data frame header in each said data frame including a respective ghost-cancellation reference signal that begins in one data segment of said data frame header and finishes in the next occurring data segment of said data frame header, said respective data segment synchronization code for said next data segment of said data frame header being subsumed in said respective ghost-cancellation reference signal that finishes therein, as in claim 51.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inoue et al., U.S. Pat. No. **6,380,984** discloses a digital television broadcast receiving apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
December 6, 2004



PAULOS M. NATNAEL
PATENT EXAMINER